UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

CARDSOFT, INC., ET AL.	§	
	§	
vs.	§	CASE NO. 2:08-CV-98-CE
	§	
VERIFONE HOLDINGS, INC., ET AL.	§	

MEMORANDUM OPINION AND ORDER

I.   INTRODUCTION

Plaintiffs CardSoft (Assignment for the Benefit of Creditors) LLC and CardSoft, Inc. (collectively "CardSoft" or "Plaintiffs") brought this action against Verifone Holdings, Inc., Verifone Inc., Hypercom Corporation, Ingenico S.A., Ingenico Corp., Ingenico Inc., Way Systems, Inc., Shera International Ltd. and Blue Bamboo (USA), Inc.[1] (collectively "Defendants"), alleging infringement of CardSoft's U.S. Patent Nos. 6,934,945 ("the '945 Patent") and 7,302,683 ("the '683 Patent").[2]   The court held a *Markman* hearing on July 29, 2011.   After considering the submissions and the arguments of counsel, the court issues the following order concerning the parties' claim construction disputes.

II.   THE PATENT-IN-SUIT

The patents-in-suit are entitled "Method and Apparatus for Controlling Communications" and are directed "to preparing and processing information to be communicated via a network or to or from other data carriers." '945 Patent at Abstract.   The Abstract of the invention explains that:

---

[1]   Defendants Shera International Ltd. and Blue Bamboo (USA), Inc. have been dismissed from this case. *See* Dkt. No. 226.

[2]   The '945 and '683 Patent share a common specification, and therefore, for convenience purposes, all future citations will be to the specification of the '945 Patent.

> For implementation of a novel "virtual machine" of the present invention, a minimal amount of hardware is required. Prior art virtual machines tend to slow down operation of the device as they interface between an application program and device drivers. The novel virtual machine incorporates a virtual message processing means that is arranged to construct, deconstruct and compare messages and applied in the native code of the processor. The message instruction means directs and controls the message processor. Similarly, a protocol processor means governs and organs [sic] communications, under the direction of a protocol instruction means in the application. These elements of the novel virtual machine increase the speed and efficiency and allow implementation of a practical device for use in communications, able to be implemented on different hardware having different BIOS/OS.

Id.   Claim 1 of the '945 Patent, which is representative of the claims of the patents-in-suit,

recites:

> 1. A communication device which is arranged to process messages for communications, comprising a virtual machine means which includes
>
> a virtual function processor and function processor instructions for controlling operation of the device, and
>
> message induction [sic] means including a set of descriptions of message data;
>
> a virtual message processor, which is arranged to be called by the function processor and which is arranged to carry out the message handling tasks of assembling the messages, disassembling messages and comparing the messages under the direction of the message instruction means that is arranged to provide directions for operation of the virtual message processor, whereby when a message is required to be handled by the communications device the message processor is called to carry out the message handling task,
>
> wherein the virtual machine means is emulatable in different computers having incompatible hardwares or operating systems.

Id. at 50:49-67.

III.   GENERAL PRINCIPLES GOVERNING CLAIM CONSTRUCTION

"A claim in a patent provides the metes and bounds of the right which the patent confers

on the patentee to exclude others from making, using or selling the protected invention." *Burke,*

Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction

is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent's claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's invention. Otherwise, there would be no need for claims. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This court's claim construction decision must be informed by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the *claims* of a patent define the invention to which the

patentee is entitled the right to exclude." 415 F.3d at 1312 (emphasis added) (*quoting*

Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc., 381 F.3d 1111, 1115 (Fed. Cir.

2004)). To that end, the words used in a claim are generally given their ordinary and customary

meaning. *Id*. The ordinary and customary meaning of a claim term "is the meaning that the term

would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as

of the effective filing date of the patent application." *Id*. at 1313. This principle of patent law

flows naturally from the recognition that inventors are usually persons who are skilled in the

field of the invention and that patents are addressed to and intended to be read by others skilled

in the particular art. *Id*.

The primacy of claim terms notwithstanding, *Phillips* made clear that "the person of

ordinary skill in the art is deemed to read the claim term not only in the context of the particular

claim in which the disputed term appears, but in the context of the entire patent, including the

specification." *Id*. Although the claims themselves may provide guidance as to the meaning of

particular terms, those terms are part of "a fully integrated written instrument." *Id*. at 1315

(quoting *Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as

being the primary basis for construing the claims. *Id*. at 1314-17. As the Supreme Court stated

long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive

portions of the specification to aid in solving the doubt or in ascertaining the true intent and

meaning of the language employed in the claims." *Bates v. Coe*, 98 U.S. 31, 38 (1878). In

addressing the role of the specification, the *Phillips* court quoted with approval its earlier

observations from *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir.

1998):

Ultimately, the interpretation to be given a term can only be determined and

confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Phillips, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the PTO understood the patent. *Id.* at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Phillips*, 415 F.3d at 1319-24. The approach suggested by *Texas Digital*—the assignment of a limited role to the specification—was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. *Id*. at 1320-21. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim

terms within the context of the patent." *Id*. at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.* What is described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. *Id.* The definitions found in dictionaries, however, often flow from the editors' objective of assembling all of the possible definitions for a word. *Id*. at 1321-22.

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id*. at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

The patents-in-suit include claim limitations that are alleged to fall within the scope of 35 U.S.C. § 112, ¶ 6. "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure. . . in support thereof, and such claim shall be construed to cover the corresponding structure . . . described in the specification and equivalents thereof." 35 U.S.C. § 112, ¶ 6. The first step in construing a means-plus-function limitation is to identify the recited function. *See Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999). The second step in the analysis is to identify in the specification the structure corresponding to the recited function. *Id.* The "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim."

Medical Instrumentation and Diagnostics Corp. v. Elekta AB, 344 F.3d 1205, 1210 (Fed. Cir. 2003) (citing *B. Braun v. Abbott Labs*, 124 F.3d 1419, 1424 (Fed. Cir. 1997)). The patentee must clearly link or associate structure with the claimed function as part of the quid pro quo for allowing the patentee to express the claim in terms of function pursuant to § 112, ¶ 6. *See id.* at 1211; *see also Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1377 (Fed. Cir. 2001). The "price that must be paid" for use of means-plus-function claim language is the limitation of the claim to the means specified in the written description and equivalents thereof. *See O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583 (Fed. Cir. 1997). "If the specification does not contain an adequate disclosure of the structure that corresponds to the claimed function, the patentee will have 'failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112,' which renders the claim invalid for indefiniteness." *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382 (Fed. Cir. 2009) (quoting *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc)). It is important to determine whether one of skill in the art would understand the specification itself to disclose the structure, not simply whether that person would be capable of implementing the structure. *See Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1382 (Fed. Cir. 1999); *Biomedino*, 490 F.3d at 953. Fundamentally, it is improper to look to the knowledge of one skilled in the art separate and apart from the disclosure of the patent. *See Medical Instrumentation*, 344 F.3d at 1211-12. "[A] challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function." *Budde*, 250 F.3d at 1376-77

IV.   CLAIM TERMS IN DISPUTE

a. "virtual machine means"

Plaintiffs' Proposed Construction	Defendants' Proposed Construction
A computer programmed to emulate a hypothetical computer for applications relating to transport of data, including payment terminal devices in which message processing and communication comprise a significant proportion of the operation of the device.	A computer programmed to emulate a hypothetical computer, which hypothetical computer processes instructions expressed in a hardware/operating system-independent language on the communications device, including function processor instructions and message instructions.

Claim 1 of the '945 Patent, which is representative of the use of the term "virtual machine means" in the patents-in-suit, recites as follows:

> 1. A communication device which is arranged to process messages for communications, comprising a *virtual machine means* which includes
>
> a virtual function processor and function processor instructions for controlling operation of the device….

'945 Patent at 50:49-67 (emphasis added). CardSoft argues that the claimed "virtual machine means" should be construed to mean "a computer programmed to emulate a hypothetical computer for applications relating to transport of data, including payment terminal devices in which message processing and communication comprise a significant proportion of the operation of the device." Defendants, on the other hand, argue that the term should be construed to mean "a computer programmed to emulate a hypothetical computer, which hypothetical computer processes instructions expressed in a hardware/operating system-independent language on the communications device, including function processor instructions and message instructions." The parties' only dispute concerning the term is whether the claimed virtual machine must "process instructions expressed in a hardware/operating system-independent language."

In a theme that recurs throughout all of their proposed constructions, Defendants seek to limit the claimed virtual machine to a hypothetical computer that "processes instructions expressed in a hardware/operating system-independent language on the communications device…." Defendants argue that this proposed limitation is required by the language of the claims, the common specification's description of the "virtual machine," and the prosecution history of the patents-in-suit. Defendants note that all of the independent claims of the patents-in-suit require that the "virtual machine means" be "emulatable in different computers having incompatible hardwares or operating systems." *Id.* at 50:65-67; 52:13-15; 52:34-36; '683 Patent at 58:8-10. Thus, Defendants argue that the virtual machine's emulation of the hypothetical computer must somehow overcome incompatibility between both different operating systems and different hardware (processors) that can only understand and process its own specific native code. Defendants contend that the only way that the claimed "virtual machine means" can overcome these incompatibilities is if the virtual machine is programmed and receives instructions in a language that is independent of both the hardware processor and the operating system. Furthermore, Defendants argue that this conclusion is supported by the common specification, which consistently emphasizes the importance of the virtual machine and its components being independent of the specific hardware processor. *See, e.g., id.* at 2:3-3:8, 3:40-45, 5:4-8, 9:37-45, at 9:66-10:21, 17:24-47. For example, the common specification explains that:

> In conventional devices, each time a message is constructed or deconstructed, the operation of the machine will be handled by the application program. To change operation of the machine, the application must be changed. This is laborious, and gives rise to problems, as discussed above.
>
> The technique of creating a virtual processor (or in this case microprocessor) is well known and referred to as an interpreter. This allows programs to operate

independent of [sic] processor. With the newer technique of also creating virtual peripherals then the whole is referred to as a "virtual machine".

A virtual machine is computer programmed to emulate a hypothetical computer. Different incompatible computers may be programmed to emulate the same hypothetical computer. Any computer programmed to emulate the hypothetical computer will thus be capable of executing programs for the virtual computer. This creates a complete portable environment for program operations.

A problem with virtual machines is emulation is slower than normal program execution. For some applications this performance penalty is a significant problem.

The above problems and disadvantages which have been discussed specifically in relation to devices configured to process payment transactions also would apply to devices configured to prepare and process any information to be sent or received via a network, not restricted to payment transaction information.

A virtual machine is computer programmed to emulate a hypothetical computer. Different incompatible computers may be programmed to emulate the same hypothetical computer. *Any computer programmed to emulate the hypothetical computer will thus be capable of executing programs for the virtual computer. This creates a complete portable environment for program operations*.

Id. at 3:40-46.

Defendants also contend that the during prosecution of the patents-in-suit, CardSoft made several clear disclaimers of claim scope by repeatedly stressing the importance of the virtual machine's compatibility and portability. First, Defendants argue that, in making the following statements, the applicant was explaining that the virtual machine of the patents-in-suit is coded using a language independent of both the hardware processor and the operating system of the device:

As discussed in the Specification page 6, lines 2-3 of the present application, a virtual machine is a computer, which is programmed to emulate a hypothetical computer. *This means that different incompatible computers (incompatible hardware and operating systems) may be programmed to emulate the same hypothetical computer. Applications may then be written for the hypothetical computer, which are therefore portable to the previously incompatible computers…*.

> The present invention … does not describe a conventional virtual machine, but an addition to a conventional virtual machine.…   There is a conventional virtual machine processor, being the "function processor", which together with the HAL and the instructions to operate it ("primitives"), controls the overall operation of the communications device.   In addition, however, a separate virtual processor, the virtual message processor, is provided, the specific function of which is to disassemble, assemble, and compare messages.
>
> *The virtual machine architecture of the present invention, therefore, is not conventional. It includes two virtual processors (and three in the preferred embodiment where a protocol processor is also provided).*

Ex. C at 3-4, attached to Defendants' Responsive Claim Construction Brief, Dkt. No. 210

(original emphasis omitted, emphasis added); *see also* Ex. D at 2-4 (applicant explaining that the

prior art does not teach the claimed virtual machine that is portable and not dependent on

particular hardware).   Defendants also argue that the following prosecution history statements

operate as a clear disclaimer of claim scope:

> Applicant respectfully points out that <u>Stern</u> fails to teach the claimed "virtual machine means" that is emulatable in different computers having incompatible hardware or operating systems." The cited <u>Stern</u> col 6, lines 18-23, describes merely JavaOS being operable on different processors supporting the Java Virtual Machine.
> The presently claimed virtual machine means *is not just a JavaOS or a Java Virtual Machine*. As recited in Claim 1 (now further amended), the claimed Virtual Machine Means comprises, inter alia, (1) the virtual function processor, (2) the message instruction means, and (3) the virtual message processor that performs several tasks, one of which being "comparing [of] the messages under the direction of the message instruction means that is arranged to provide directions for operation of the virtual message processor."

Ex G at 8-9, attached to Defendants' Responsive Claim Construction Brief, Dkt. No. 210

(emphasis added). Defendants contend that, since the applicant repeatedly argued that the virtual

machine of the patents-in-suit eliminate dependence on the hardware of the device, the applicant

clearly disavowed any claim scope where the virtual machine is dependent on the hardware.

Having carefully reviewed Defendants' arguments, the court is not convinced that the

patentee clearly limited the scope of his invention to "virtual machines" that "process[]

instructions expressed in a hardware/operating system-independent language on the communications device, including function processor instructions and message instructions." First, Defendants' proposed limitation runs contrary to the language of the claims. For example, Claim 5 of the '945 Patent recites that the message processor is implemented in the native software code of the microprocessor in the device. *See* '945 Patent at 51:18-22. Furthermore, Claim 6 recites the same for the function processor. *See id.* at 51:23-25. If both the message processor and the function processor, which are part of the virtual machine, can be implemented in the native software code of the microprocessor, then they do not have to be expressed in "a hardware/operating system-independent language" as Defendants' proposed construction would require.

Second, the specification sections on which Defendants rely do not compel Defendants' proposed limitation. For example, column 3, lines 29-55 of the specification, which is quoted above, criticizes prior art virtual machines for requiring <u>applications</u> written in hardware-specific code since such applications would not be portable to different devices. '945 Patent at 3:37-54. It does not, however, discuss whether the virtual machine itself can be written in hardware-specific code – indeed, the cited portion is silent on the topic of the code used to implement the claimed virtual machine. Likewise, none of the other specification language to which Defendants cite states that the virtual machine, or any part thereof, must necessarily be written in a hardware/operating system independent language in order to be emulatable in different computers.

Finally, Defendants' contention that the doctrine of prosecution disclaimer supports their proposed limitation is rejected. For prosecution disclaimer to apply, there must be a clear and unequivocal disavowal of a particular construction or scope of a claim term. *See, e.g.,*

Honeywell Int'l, Inc. v. Universal Avionics Sys., 493 F.3d 1358 (Fed. Cir. 2007). The portions of

the prosecution history cited and relied upon by Defendants, however, do not make any such

clear disclaimer of virtual machines written in hardware-specific code. For example, Defendants

allege that the applicant argued to the PTO that the claimed virtual machine was not

conventional because it was coded using language independent of hardware. To the contrary, the

passages on which Defendants rely demonstrates that the applicant argued that the claimed

virtual machine was not conventional because "[i]t includes two virtual processors [the virtual

message processor and the virtual function processor]... ." Ex. C at 3-4, attached to Defendants'

Responsive Claim Construction Brief, Dkt. No. 210; *see also* Ex G at 8-9, attached to

Defendants' Responsive Claim Construction Brief, Dkt. No. 210 (explaining that the "claimed

virtual machine means is not just a JavaOS or a Java Virtual Machine" because it is comprised of

the virtual function processor, the message instruction means, and the virtual message

processor). Accordingly, the court rejects Defendants' argument that the "virtual machine

means" must "process[] instructions in a hardware/operating system-independent language on

the communication device."

In contrast to Defendants' proposed construction, the court finds that CardSoft's

proposed construction of "virtual machine means" – i.e., "a computer programmed to emulate a

hypothetical computer for applications relating to transport of data, including payment terminal

devices in which message processing and communication comprise a significant proportion of

the operation of the device" – is supported by the common specification of the patents-in-suit.

For example, the specification states that "[a] virtual machine is [a] computer programmed to

emulate a hypothetical computer." *See, e.g.*, '945 Patent at 3:40-41. However, although the

specification states that "[t]he virtual machine therefore lends itself particularly to applications

relating to communications, such as payment terminal devices and other devices in which message processing and communication comprise a significant proportion of the operation of the device," *see id.* at 4:51-65, this does not need to be a part of the court's construction. Accordingly, the court construes "virtual machine means" and "virtual machine" to mean "a computer programmed to emulate a hypothetical computer for applications relating to transport of data."

b. "emulatable in different computers having incompatible hardwares or operating systems"

Plaintiffs' Proposed Construction	Defendants' Proposed Construction
Capable of being implemented on computers having different hardware or operating systems.	The virtual machine means of the claimed communications device processes instructions expressed in a language that is hardware/operating system-independent so that the claimed virtual machine means can also be implemented, without compiling to a hardware/operating system-specific code or otherwise altering the virtual machine means or the instructions it processes, on other computers having hardware that is incompatible with that of the claimed device and on yet other computers having operating systems that are incompatible with that of the claimed device

Claim 1 of the '945 Patent, which is representative of the use of the phrase "emulatable in different computers having incompatible hardwares or operating systems," recites as follows:

A communication device which is arranged to process messages for communications, comprising a virtual machine means which includes

a virtual function processor and function processor instructions for controlling operation of the device, and

message induction means including a set of descriptions of message data;

a virtual message processor…,

wherein the virtual machine means is emulatable in different computers having incompatible hardwares or operating systems.

Id. at 50:49-67 (emphasis added). CardSoft urges the court to construe the phrase "emulatable in

different computers having incompatible hardwares or operating systems" to mean "capable of

being implemented on computers having different hardware or operating systems." Defendants,

on the other hand, argue that the court should construe the phrase to mean "the virtual machine

means of the claimed communications device processes instructions expressed in a language that

is hardware/operating system-independent so that the claimed virtual machine means can also be

implemented, without compiling to a hardware/operating system-specific code or otherwise

altering the virtual machine means or the instructions it processes, on other computers having

hardware that is incompatible with that of the claimed device and on yet other computers having

operating systems that are incompatible with that of the claimed device." The parties' primary

disputes are: (1) whether the virtual machine means must process instructions expressed in "a

hardware/operating system-independent language;" and (2) whether the virtual machine must be

implemented on various different computers "without compiling to a hardware/operating system-

specific code or otherwise altering the virtual machine means or the instructions it processes."

As discussed above, the court rejects Defendants' argument that the virtual machine must be

expressed in "a hardware/operating system-independent language." Accordingly, in its analysis

of this term, the court will address only Defendants' contention that the virtual machine cannot

be compiled directly to the hardware-specific code of a particular processor.

Defendants argue that compiling to the hardware-specific code is outside the claim

language because, if such compiling is done, then the virtual machine would be limited to

operation on that one particular processor and would no longer be emulatable on a different,

incompatible processor. Similarly, Defendants contend that programming the virtual machine in

code that is specific to a particular operating system would limit operation of the virtual machine

to that single operating system and preclude its operation on a different, incompatible operating system. Defendants, therefore, urge the court to conclude that the "emulatable" limitation must be construed to recognize that it requires that the virtual machine not be compiled to a hardware/operating system-specific code.

As noted above, however, both Claim 5 and Claim 6 of the '945 Patent require that the virtual message processor and the virtual function processor, respectively, are implemented in the native code of the specific microprocessor in the device. As such, Defendants' proposed limitation is again at odds with the plain language of Claims 5 and 6 of the '945 Patent.[3] Furthermore, the common specification teaches that the "message processor 105 and protocol processor 106 are implemented *in native code of the payment terminal* and therefore operate at relatively high speed." '945 Patent at 10:26-29 (emphasis added). Thus, Defendants' proposed construction would also improperly read embodiments out of the scope of the patents-in-suit. As such, the court rejects Defendants' proposed construction.

Plaintiff's proposed construction,[4] however, is more consistent with the plain meaning of the words of the claim and with the common specification of the patents-in-suit. For example, the specification states that "[d]ifferent incompatible computers may be programmed to emulate the same hypothetical computer. Any computer programmed to emulate the hypothetical computer will thus be capable of executing programs for the virtual computer." *See, e.g.*, '945 Patent 3: 40-46. The specification further states that "[t]he virtual machine 101, 102, 103 can be

---

[3]   Defendants again rely on prosecution history statements discussed in the court's analysis of the "virtual machine means." In accordance with the court's previous analysis, the court rejects Defendants' contention that any of the prosecution history statements on which they rely constitute a clear disclaimer of virtual machines that have been compiled down to the hardware-specific code of the processor.

[4]   "Capable of being implemented on computers having different hardware or operating systems."

adapted for many different hardware 100 arrangements (i.e. many different brands of payment terminal).   Different arrangements of hardware 100 can therefore be controlled by the same application software 104." *See id.* at 10:2-7. Thus, the court construes the phrase "emulatable in different computers having incompatible hardware or operating systems" to mean "capable of executing programs on different computers having incompatible hardware or operating systems." *See id*. at 3:43-46 ("Any computer programmed to emulate the hypothetical computer will thus be *capable of executing programs* for the virtual computer.") (emphasis added)).

c.   "virtual message processor"

Plaintiffs' Proposed Construction	Defendants' Proposed Construction
A program module which processes messages, including assembling, disassembling and/or comparing messages, for communication to and/or from a payment terminal device.	Software that emulates a physical processor on the claimed communications device to handle the claimed messages in accordance with instructions expressed on the communications device in a hardware/operating system-independent language.

The parties' only dispute regarding the claimed "virtual message processor" is whether the processor must "handle the claimed messages in accordance with instructions expressed on the communications device in a hardware/operating system-independent language." With regard to this term, Defendants argue that their proposed limitation is required by the following description of the "virtual message processor":

> The message processor means is preferably translated into the native code of the microprocessor in each hardware device on which the virtual machine is to be implemented. The message processor instructions are preferably virtual instructions to be expressed only in the language defined by the message processor means- and thus never requiring translation to any real hardware processor.

'945 Patent at 4:5-11. Furthermore, Defendants contend that the prosecution history confirms that their proposed limitation is necessary. In particular, Defendants argue that when the

17

applicant amended Claim 1 of the '945 Patent to add the "message instruction means" to the

"virtual message processor" limitation, the applicant argued:

> As stated in the Specification page 7, providing a separate virtual message processor allows for 'faster, simpler programming.' Stern does not teach the provision of the claimed virtual machine with a dedicated virtual message processor. That is, if a Java Virtual Machine as described in Stern is used to perform messaging, each application developed would be required to adjust to the characteristics of the different devices that the application was to execute on, such as screen width and fonts.
>
> The claimed virtual message processor removes this burden from the development of the application and places it on the software platform that resides on the device. This relieves the application developers of the burden of programming to the physical characteristics of the platform that application will execute on.

Ex. G at 13-14, attached to Defendants' Responsive Claim Construction Brief, Dkt. No. 210; *see also id.*, Ex. D at 2-3.

The specification explains that the "virtual machine processor" includes a "message processor 105" that is "implemented in software code." '945 Patent at 10:18-20. The specification then explicitly states that the "message processor 105 … [is] *implemented in the native code* of the payment terminal and therefore operates at relatively high speed." *Id.* at 10:26-29. When read in light of the specification, the claimed "virtual message processor" is implemented in the native code of the communications device. The court disagrees with Plaintiffs that the doctrine of claim differentiation requires the court to hold otherwise. Although claim 5 requires that "the message processor be implemented in the native software code of the microprocessor," claim differentiation does not trump the clear import of the specification. *See Edward Lifesciences LLV v. Cook Inc.*, 582 F.3d 1322, 1332 (Fed. Cir. 2009) ("claim differentiation is a rule of thumb that does not trump the clear import of the specification."). Here, the specification makes clear that the claimed "virtual message processor" is implemented

in the native code of the communications device. The specification, however, states that the

claimed invention is not limited to devices configured to process payment transactions. *See id.* at

3:50-55. The court, therefore, rejects CardSoft's proposed "payment terminal device" limitation.

In conclusion, the court construes "virtual message processor" to mean "software

implemented in the native code of the communications device that processes messages, including

assembling, disassembling and/or comparing messages, for communication to and/or from a

communications device."

d. "virtual function processor"

Plaintiffs' Proposed Construction	Defendants' Proposed Construction
A program module which controls and/or selects general operations of a payment terminal device.	Software that emulates a physical processor on the claimed communications device to control the operation of the device, and that interfaces with an application running on the device to process instructions from the application that are expressed on the communications device in a hardware/operating system-independent language.

Defendants again attempt to import a limitation, requiring that the "virtual function

processor" "interface[] with an application running on the device to process instructions from the

application that are expressed on the communications device in a hardware/operating system-

independent language." Defendants' proposed limitation runs contrary to the language of Claim

6 of the '945 Patent, which requires that "the function processor is implemented in the native

code of the microprocessor."   Considering this, the court rejects Defendants' proposed

construction.

In contrast to Defendants' proposed construction, CardSoft's proposed construction is

supported by the common specification of the patents-in-suit. In particular, the common

specification states that the claimed virtual machine includes "a function processor 107 the

operation of which is to control and select general operations of the device not specially

controlled by the message and protocol processors 105, 106." '945 Patent at 10:34-37; *see also*

id. at 5:15-18.   The court, however, again notes that the claimed invention is not limited to

"payment terminal" devices. *See id.* at 3:50-55. The court, therefore, construes "virtual function

processor" to mean "software which controls and/or selects general operations of a

communication device."

e.   "message instruction means"

Plaintiffs' Proposed Construction	Defendants' Proposed Construction
Instructions arranged to provide directions for operation of a message processor, which include a description of a field of message data.	Governed by § 112, ¶ 6. **Function:** Using the hardware/operating system-independent language of the virtual machine means to specify operations that the virtual message processor carries out on the claimed messages. **Structure:** A set of instructions for processing the claimed messages, issued by the application and written and loaded onto the claimed communications device in a hardware/operating system-independent language.

Claim 1 of the '945 Patent, which is representative of the patents' use of the term

"message instruction means," recites as follows:

> A communication device which is arranged to process messages for communications, comprising a virtual machine means which includes
>
> a virtual function processor and function processor instructions for controlling operation of the device, and
>
> *message induction means* [sic] including a set of descriptions of message data;
>
> a virtual message processor, which is arranged to be called by the function processor and which is arranged to carry out the message handling tasks of assembling the messages, disassembling messages and comparing the messages under the direction of the *message instruction means that is arranged to provide directions for operation of the virtual message processor*,

whereby when a message is required to be handled by the communications device the message processor is called to carry out the message handling task,

wherein the virtual machine means is emulatable in different computers having incompatible hardwares or operating systems.

Id. at 50:49-67 (emphasis added).   The parties' dispute concerning the claimed "message instruction means" is two-fold: (1) whether the term is governed by 35 U.S.C. § 112, ¶ 6; and (2) whether the claimed message instructions must be "in a hardware/operating system-independent language."

First, Defendants contend that the term "message instruction means" is subject to means-plus-function treatment. It is well settled the use of the word "means" in a claim limitation raises a rebuttable presumption that the limitation is a means-plus-function limitation under § 112, ¶ 6. *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375 (Fed. Cir. 2003). This presumption may be rebutted only if the patentee can demonstrate that the claim language itself recites sufficient structure to perform the claim function in its entirety. *Id.* Because the "message instruction means" limitation uses the word "means," the presumption that this limitation is a means-plus-function limitation applies. The recited function of the "message instruction means" is clear from the plain language of the claims – that is, "[providing] directions for operation of the virtual message processor." CardSoft argues that the independent claims of the patents-in-suit recite sufficient structure to perform this function in its entirety. The court, however, is not persuaded that CardSoft has overcome the presumption that is invoked by the use of the term "means." As such, the court rejects CardSoft's argument that the term "message instruction means" is exempt from means-plus-function treatment.

Defendants argue that the function of the "message instruction means" is "using the hardware/operating system-independent language of the virtual machine means to specify

operations that the virtual message processor carries out on the claimed messages." Defendants, however, offer no support for their proposed alteration of the function recited in the claims. Furthermore, Defendants' proposed construction attempts to import a limitation as to the "way" in which the function is performed. Federal Circuit precedent, however, makes clear that the "court must not import unclaimed functions into means-plus-functions limitations." *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 312 Fed. Appx. 326, 332 (Fed. Cir. 2009) (citing *JVW Enters., Inc. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1331 (Fed. Cir. 2005). As such, the court rejects Defendants' proposed function and concludes that the function of the claimed "message instruction means" is "providing directions for operation of the virtual message processor." *See Lockheed Martin Corp. v. Space Sys./Loral, Inc.*, 324 F.3d 1308, 1319 (Fed. Cir. 2003) ("The function is properly identified as the language after the 'means for' clause and before the 'whereby' clause, because a whereby clause that merely states the result of the limitations in the claim adds nothing to the substance of the claim.").

With regard to the structure corresponding to this function, Defendants argue that the corresponding structure is "a set of instructions for processing the claimed messages, issued by the application and written and loaded onto the claimed communications device in a hardware/operating system-independent language." As with their other proposed constructions, Defendants again seek to import a limitation, requiring that the claimed message instructions be "in a hardware/operating system-independent language." Defendants' proposed construction, however, again runs afoul of the language of the claims. In particular, Claim 7 of the '945 Patent recites that "the message instruction means do not require translation to the native software code of the microprocessor." According to the doctrine of claim differentiation, this creates a presumption that Claim 1 (from which Claim 7 depends) must cover both "message instruction

22

means" that do not require translation to the native software code of the microprocessor and those that do require translation. *See Seachange Intern., Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1368-69 (Fed. Cir. 2005). The court is not convinced that Defendants have overcome this presumption. Furthermore, Defendants' reliance on the specification for their proposed limitation is misplaced. Although the specification states that the "message processor instructions are preferably virtual instructions to be expressed only in the language defined by the message processor means- and thus never requiring translation to any real hardware processor," this is merely a embodiment of the claimed "message processor instructions." It is improper for the court to read such an embodiment into the claims. In summary, the court rejects Defendants' proposed structure because it is not supported by the claim language, common specification, or prosecution history of the patents-in-suit.

Having carefully reviewed the patents-in-suit, the court concludes that the structures corresponding to the function of "providing directions for operation of the virtual message processor" are: 13:29-14:2; 15:23-34; Figure 11 and Figure 8. The specification states that "FIG. 11 is a schematic diagram illustrating the structure of the message instruction means 109." '945 Patent at 13:29-30. It then goes on to explain that structure in detail. *Id.* at 13:30-14:2. Furthermore, the specification states that:

> the present invention includes another class of message instruction means, known as a "Form". Instead of a Data Representation as a message descriptor, a Form includes description of a Location of the data field in the Form. FIG. 8 is a display provided by a development tool enabling the programmer to prepare message instructions for a Form message.

Id. at 15:23-29. The specification also explains the structure of the "form" embodiment of the "message instruction means." *Id.* at 15:23-34. These are the only two structures identified in the specification that are clearly linked to the function of the "message instruction means."

In conclusion, the court construes the term "message instruction means" as follows: (1) the function is "providing directions for operation of the virtual message processor;" and (2) the structure is "13:29-14:2; 15:23-34; Figure 11 and Figure 8, and equivalents thereof."

f. "function processor instructions" ('945 Patent: 1, 12, 14; '683 Patent: 1)

Plaintiffs' Proposed Construction	Defendants' Proposed Construction
Instructions arranged to provide directions for operation of a function processor.	A set of instructions that control operation of the claimed communications device, written and loaded onto the communications device in the hardware/operating system-independent language of the virtual function processor.

The parties' proposed constructions for the claim term "function processor instructions" differ in two material respects. First, Defendants' proposed construction requires that the "function processor instructions" control the operation of the claimed communications, and second, Defendants' proposed construction requires that the "function processor instructions" be written in the hardware/operating system-independent language. As to the first point, CardSoft does not dispute that the "function processor instructions" control the operation of the claimed communications device. Indeed, the claims expressly recite "function processor instructions for controlling operation of the device," and the specification explains that the "function processor instructions" "control[] operation of the device." '945 Patent at 3:60-61; 7:26-27; 7:47. As such, the court agrees with Defendants that the "function processor instructions" is a set of instructions that control operation of the communications device.

With respect the parties' second dispute, the court rejects Defendants' contention that the "function processor instructions" must be written in a hardware/operating system-independent language. Defendants' proposed limitation again runs contrary to the language of the claims. Specifically, Claim 8 of the '945 Patent recites "wherein the function processor instruction

means are implemented in software defined by the function processor means and do not require translation to the native code of the microprocessor." As discussed above, this claim creates a presumption that because Claim 8 limits the function processor instruction means to implementation in software defined by the function processor, Claim 1 is not so limited and is broad enough to cover both function processor instructions implemented in software defined by the function processor and function processor instructions not implemented in software defined by the function processor. Furthermore, Defendants' reliance on statements in the specification indicating that the function processor instructions "preferably" never require translation to any real hardware processor do not overcome this presumption. '945 Patent at 5:19-25. These statements merely describe an embodiment of the invention claimed by the patents-in-suit and such embodiments cannot be read into the claims.
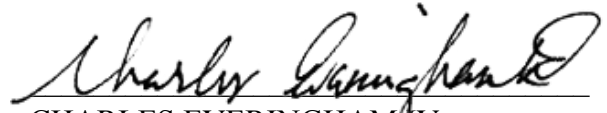
In conclusion, the court construes "function processor instructions" to mean "a set of instructions that control operation of the communications device."

V.   CONCLUSION

The court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the court.

It is so ORDERED.

SIGNED this 23rd day of September, 2011.

CHARLES EVERINGHAM IV
UNITED STATES MAGISTRATE JUDGE